CLAIMS

1. An electric heater assembly for a smooth top cooking appliance, the assembly comprising a first heating zone (16) provided with at least one first heating element (20), and at least one second heating zone (18) provided with at least one second heating element (22), the at least one second heating zone at least partially surrounding the first heating zone, and a cyclic energy regulator (26, 32) for energising the heating elements from a power supply (28), characterised in that a first cyclic energy controller (26) is provided adapted to energise the at least one first heating element (20) and in that a second cyclic energy controller (32) is provided adapted to energise the at least one second heating element (22), wherein the assembly is adapted whereby the first heating zone (16) is operable alone with the first cyclic energy controller (26) controlling power of the at least one first heating element (16) at selected settings between a maximum duty cycle and a minimum duty cycle, and wherein the assembly is further adapted whereby the first and the at least one second heating zones (16, 18) are operable together and such that in a selected full power operating condition of the assembly the second cyclic energy controller energises the at least one second heating element at substantially maximum duty cycle to provide a substantially maximum power in the at least one second heating zone, and the first cyclic energy controller energises the at least one first heating element at less than maximum duty cycle to provide less than maximum power in the first heating zone.

2. An assembly as claimed in claim 1, characterised in that the heater assembly is further adapted whereby the

first and second heating zones (16, 18) are operable together such that, at selected operating power conditions of the heater assembly, lower than the full power operating condition, a predetermined fixed or varying ratio is arranged between the duty cycle provided by the first cyclic energy controller and the duty cycle provided by the second cyclic energy controller.

3. An assembly as claimed in claim 2, characterised in that the ratio is fixed.

4. An assembly as claimed in claim 3, characterised in that the predetermined ratio is that obtaining at the full power operating condition of the heater assembly.

5. An assembly as claimed in claim 3 or 4, characterised in that the predetermined ratio is maintained down to a low power operating condition of the heater assembly limited by a minimum duty cycle achievable by the first cyclic energy controller (26).

6. An assembly as claimed in claim 5, characterised in that, when such low power operating condition of the heater assembly is reached, a lower power operating condition of the heater assembly is obtained by maintaining, at its minimum value, the duty cycle set by the first cyclic energy controller (26) and further reducing the duty cycle provided by the second cyclic energy controller (32) whereby a further predetermined ratio is established between the duty cycles provided by the first and second cyclic energy controllers.

7. An assembly as claimed in claim 3, characterised in that the ratio is variable.

8. An assembly as claimed in claim 7, characterised in that the ratio is arranged to vary in predetermined manner whereby it is gradually changed from an initial value, obtaining at the full power operating condition of the heater assembly, to a final value, obtaining at a lowest power operating condition of the heater assembly.

9. An assembly as claimed in claim 8, characterised in that the final value of the ratio is substantially unity, achieved by operating both the first and second cyclic energy controllers (26, 32) to provide substantially minimum and matched duty cycles.

10. An assembly as claimed in any preceding claim, characterised in that, in the selected full power operating condition of the heater assembly, the second cyclic energy controller (32) is arranged to energise the at least one second heating element (22) at substantially 100 percent duty cycle, with the first cyclic energy controller (26) arranged to energise the at least one first heating element (20) at about 80 percent duty cycle.

11. An assembly as claimed in any preceding claim, characterised in that the first and second cyclic energy controllers (26, 32) comprise first and second cycling energy regulators or first and second cycling relays.

12. An assembly as claimed in any preceding claim, characterised in that the first and second cyclic energy controllers (26, 32) are operated by a microprocessor-based control system (34).

13. An assembly as claimed in claim 12, characterised in that the microprocessor-based control system (34) is associated with manual input selection means (36).

14. An assembly as claimed in any preceding claim, characterised in that the first heating zone (16) comprises a main heating zone, with the at least one second heating zone (18) comprising at least one auxiliary heating zone.

15. An assembly as claimed in claim 14, characterised in that the first heating zone (16) is circular and arranged concentrically with and surrounded by one or more second heating zones (18).

16. An assembly as claimed in claim 14, characterised in that the first heating zone (16) is circular and partially bordered by one or two second heating zones (18).

17. An assembly as claimed in any preceding claim, characterised in that the first and second heating zones (16, 18) are separated by a wall (14) of thermal insulation material.